

REMARKS:

- 1) In the Office Action Summary, item 4) indicates that claims 1, 2 and 4 to 11 are pending in this application. That seems to have overlooked the Preliminary Amendment filed with the original application papers on September 30, 2004. **That Preliminary Amendment canceled prior claims 1 to 11 and instead introduced new claims 12 to 21 for examination.** Thus, actually, claims 12 to 21 were pending. There is no substantive problem, however, because claims 12 to 21 corresponded to the previous revised PCT International claims 1, 2 and 4 to 11, which were apparently the basis of the Office Action. In other words, claims 12 to 21 corresponded to prior claims 1, 2 and 4 to 11, except for having been renumbered in succession and presented as clean-text new claims.
- 2) The present amendment has amended the previously submitted claims 12 to 21, and has added new claims 22 to 28.

Claim 12 has been amended to make expressly clear that the single-layer or multilayer coat which includes at least one cobalt coat layer is disposed on the molybdenum-phosphorus coat. This clarification of the relative order or arrangement of the coat layers is supported in the original disclosure (e.g. see page 11 lines 1 to 10, page 12 lines 1 to 7, page 16 line 25 to page 17 line 6, page 18 lines 1 to 14, and the examples at pages 28 to 33). Thus, the amendment of claim 12 does not introduce any new matter.

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The dependent claims have been amended where necessary for better conformance with claim 12.

New claims 22 to 28 have been added. Claims 22 to 27 are respectively supported by the original disclosure of claims 12, 12, 13, 13, 14, 16 in sequence, and claim 28 is supported by claims 19 and 21 as well as the disclosure at page 10 lines 20 to 24 and page 17 lines 18 to 23. Thus, the new claims do not introduce any matter.

Entry and consideration of the claim amendments and the new claims are respectfully requested.

- 3) Referring to section 2 on pages 2 to 3 of the Office Action, the rejection of claims 1, 2 and 4 to 11 (relating to new pending claims 12 to 21) as obvious over US Patent 5,364,467 (Schmid et al.) in view of US Patent 6,060,165 (Asada et al.) is respectfully traversed.
- 4) Present amended independent claim 12 is directed to a color metallic pigment comprising coated metal particles.

Each coated metal particle comprises a molybdenum-phosphorus coat disposed on the surface of metal base particle, as well as a single-layer or multi-layer coat disposed on the molybdenum-phosphorus coat. The molybdenum-phosphorus coat consists of an oxide film containing molybdenum and/or phosphorus. The single-layer or multilayer coat includes at least one cobalt coat layer consisting of an anhydrous oxide film containing cobalt.

Not only the layer compositions, but also the order or arrangement of the layers are significant to the invention. Namely, the coat layer arranged on the surface of the metal base particle is a molybdenum-phosphorus coat comprising an oxide of molybdenum and/or phosphorus. On the other hand, the cobalt coat layer comprising an anhydrous oxide of at least cobalt is arranged outwardly or outside on the molybdenum-phosphorus coat. Note that a further intermediate layer may optionally be provided between the cobalt coat layer and the molybdenum-phosphorus coat layer.

The prior art references do not disclose and would not have suggested such an order or arrangement of layers having the presently recited compositions, on a metal base particle for a color metallic pigment.

- 5) Schmid et al. disclose a pigment including metallic base particles that are each coated with three layers A, B and C.

The innermost layer A provided directly on the metal particle is a colorless or selectively absorbing layer of a metal oxide such as zirconium oxide, silicon oxide, tin oxide, chromium oxide, iron oxide, titanium dioxide, and mixtures thereof (abstract, col. 2 lines 61 to 66, col. 8 lines 1 to 5, etc.).

The second layer B arranged outwardly on the inner layer A has a different character and different composition in comparison to the first layer A. Particularly, the second layer B is made of a non-selectively absorbing layer of carbon, metal and/or a metal oxide, such as iron, cobalt, nickel, chromium, molybdenum, tungsten, or black metal oxides such as magnetite, nickel oxide,

cobalt oxide and vanadium oxide (abstract, col. 3 lines 3 to 11, col. 7 lines 49 to 53, etc.).

The optional outermost third layer C is again a colorless or selectively absorbing layer of a metal oxide such as zirconium oxide, silicon oxide, tin oxide, chromium oxide, iron oxide and titanium dioxide (abstract, col. 3 lines 20 to 28, col. 8 lines 6 to 10, etc.).

Thus, it is clear in the disclosure of Schmid et al. that the innermost layer A and the next layer B DO NOT correspond to or suggest the presently claimed molybdenum-phosphorus coat layer that is arranged on the surface of the metal particle, and the further cobalt coat layer that is arranged outside of (i.e. directly or indirectly on) the molybdenum-phosphorus coat layer.

The innermost layer A according to Schmid et al. does **NOT** consist of an oxide film containing molybdenum and/or phosphorus. To the contrary, the first layer A is a colorless or selectively absorbing metal oxide layer such as zirconium oxide, silicon oxide, tin oxide, chromium oxide, iron oxide or titanium oxide. Rather, only the second layer B may contain molybdenum as a non-selectively absorbing layer (col. 3 lines 3 to 7). This same second layer B may further or alternatively contain cobalt or cobalt oxide (col. 3 lines 7 to 9).

According to Schmid et al., it is thus the **second layer B** that can contain **both** cobalt (or cobalt oxide) as well as molybdenum in the same layer, to serve the same purpose of a non-selectively absorbing layer.

There would have been **NO suggestion** to include cobalt in the second layer B, while including molybdenum in the first layer A,

because the first layer A shall be a selectively absorbing layer, but molybdenum is disclosed only as a non-selectively absorbing component of the second layer B.

- 6) As acknowledged by the Examiner, Schmid et al. do not disclose phosphorus included in a coating layer arranged on the surface of the metal particle. In this regard, the Examiner has referred to Asada et al.

However, a person of ordinary skill in the art relating to color metallic pigments would not have considered the disclosure of Asada et al. in this regard, because Asada et al. relate to a non-analogous art. Namely, Asada et al. disclose only powder compositions for a thick film paste or particularly a conductor paste used in semiconductor or electronic device fabrication (col. 1 lines 6 to 29), and DO NOT disclose any features or compositions of a color metallic pigment. The Asada et al. disclosure thus relates to a different field of endeavor, and does not offer solutions to the same problems faced in the present inventive field of endeavor (e.g. implementing diverse colors and an excellent visual appearance).

Thus, the teachings of Asada et al. relating to proper compositions and coating layer arrangements for particles of a conductor paste for electronic device fabrication would not have been recognized as being applicable or pertinent in the very-different context of a color metallic pigment. It would have been completely unknown whether the compositions disclosed by Asada et al. would have provided useful optical or visual characteristics as necessary for a color metallic pigment.

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Moreover, even if the teachings of Asada et al. would have been considered in combination with those of Schmid et al., the present invention would not have been suggested. While Asada et al. mention an oxide of phosphorus and/or molybdenum to form a vitreous thin layer on a metal powder particle, there would have been no suggestion to provide an inner layer of a molybdenum-phosphorus coat on the surface of the metal particle, in combination with a cobalt coat layer outside of the molybdenum-phosphorus layer, as presently claimed.

- 7) Still further, there would have been no motivation to provide the layer arrangement according to the present invention, because the references would not have suggested any purpose, function, or benefit thereof.

Namely, the molybdenum-phosphorus coat of the present invention has the function of facilitating a homogeneous deposition of the single-layer or multilayer coat including the cobalt coat layer onto the underlying molybdenum-phosphorus coat (see page 17 lines 1 to 3 of the specification). Also, the molybdenum-phosphorus coat provides corrosion resistance for the metal particle, so that this initial inner coat layer prevents corrosion or abnormal reactions of the metal particle when it is subjected to the treatment solution for forming the subsequent coat layer or layers (see page 17 lines 4 to 6).

For these reasons, it is important according to the invention to provide the molybdenum-phosphorus coat as the inner coat on the surface of the metal particle, before providing the outer single-layer or multilayer coat including at least one

cobalt coat layer on the underlying molybdenum-phosphorus coat. The references would not have suggested any such benefits, advantages, features, or functions as achieved according to the present invention.

- 8) For the above reasons, the invention of present independent claim 12 would not have been obvious over the prior art. The dependent claims are patentably distinguishable over the prior art already due to their dependence. Moreover, the broad generalized teachings of Asada et al. relating to compositions for coatings on conductive paste particles for electronics fabrication would not have been pertinent in the present inventive context of a color metallic pigment with several coating layers as recited in various dependent claims. Still further, while Asada et al. broadly or generally mention some of the compositional components of additional layers recited in the present dependent claims, Asada et al. did not disclose or suggest the distinct layer sequence or order as well as the corresponding composition of the additional layers according to the invention.
- 9) For the above reasons, the Examiner is respectfully requested to withdraw the rejection under 35 USC §103 applying Schmid et al. in view of Asada et al.
- 10) The new claims 22 to 28 have been drafted from the ground up as a fresh approach at covering the inventive subject matter, with a slightly different claim style and terminology in comparison to the original claims, which were a literal translation of

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corresponding foreign-language PCT International claims in accordance with the PCT procedures. Claim 22 recites that a coated particle of the color metallic pigment comprises a metal particle, an inner coat layer disposed directly on a surface of the metal particle, and a cobalt-containing coat layer disposed directly or indirectly on the inner coat layer. The inner coat layer comprises an oxide of at least molybdenum and/or phosphorus. The cobalt-containing coat layer comprises an anhydrous oxide of at least cobalt. In view of the above discussion of the references, it is apparent that the presently claimed layer composition and order would not have been suggested by the prior art.

- 11) Favorable reconsideration and allowance of the application, including all present claims 12 to 28, are respectfully requested.

Respectfully submitted,  
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